

A NEW AND PRIMITIVE GENUS OF CRYPHOCRICINAE (HETEROPTERA: NAUCORIDAE)

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Abstract. — *Procryphocricos perplexus* NEW GENUS, NEW SPECIES is described and compared to *Cryphocricos* Breddin. The predominantly plesiomorphic character states of this new genus are discussed.

Key Words. — Insecta, Heteroptera, Naucoridae, Cryphocricinae

During an expedition to South America Dan A. Polhemus and I collected numerous naucorids among which is a remarkable new cryphocricine genus from Colombia that is superficially similar to *Cryphocricos* Breddin but possessing a number of plesiomorphic and some apomorphic characters that distinguish it.

The subfamily Cryphocricinae was proposed by Montandon (1897) to hold *Cryphocricos* Breddin and *Cataractocoris* Montandon. It was redefined by Usinger (1941) to exclude *Cataractocoris*, which was placed in his new subfamily Ambrysinae. Usinger proposed a family level classification of Naucoridae, based on a number of characters, that was a radical departure from that of Montandon (1897). Since then alternative arrangements the family-group classification of Naucoridae have been proposed by a number of authors (e.g., Popov 1970, De Carlo 1971, Lopez Ruf & Bachmann 1987, Stys & Jansson 1988; the latter overlooked the work by Lopez Ruf & Bachmann). In these proposals the rank and relationships of many family group taxa have been shifted, and a new taxon, Pelocoridae, was proposed by De Carlo (1971), supported by Lopez Ruf & Bachmann (1987), but rejected by others (e.g., Polhemus 1979, Stys & Jansson 1988). The various schemes have been discussed by the latter, who placed *Cryphocricos* in the monotypic tribe Cryphicricini. Both D. A. Polhemus and I consider all of these proposals to be poorly founded, based on too few characters, and none of them have been supported by a convincing phylogenetic analysis; this matter will be treated in detail later, and supported by a cladistic analysis. Although the suprageneric classification of the Naucoridae remains in my view an open question, I have used the classification of Stys & Jansson (1988) in order to establish a framework for this paper.

The addition of *Procryphocricos* NEW GENUS does not require redefinition of the family group taxon that holds *Cryphocricos*, the Cryphocricini, but instead supports Usinger's decision to separate it. In Table 1 these two genera are compared and the polarity of characters shown. Their prosterna, abdominal sense organs, brachyptery and apparent plastron are so similar, but so different from any other closely related naucorid genera (e.g., *Cataractocoris* Montandon) that I consider it unnecessary to include other genera in the comparison. The morphology used here follows Parsons (1966) and Parsons & Hewson (1974).

The CL number following locality data refers to codes used by the author to reference ecological data.

Table 1. Comparison of *Cryphocricos* and *Procryphocricos*. Apomorphic character states are marked with an asterisk.

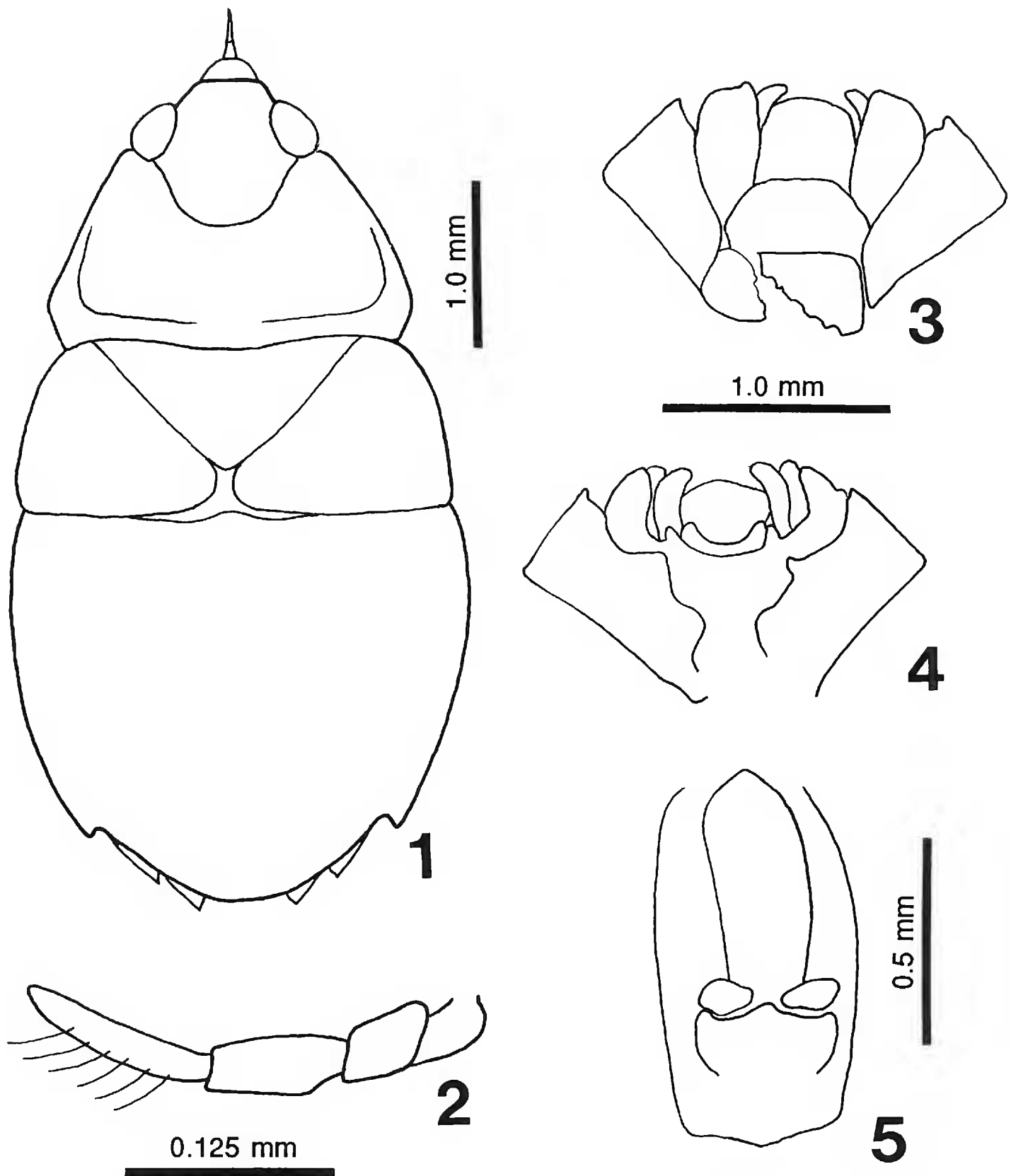
Character	<i>Cryphocricos</i>	<i>Procryphocricos</i>
Setae on ventral surface	very short; plastron only*	scattered long silky setae plus plastron
Mid and hind femora armed (knobs, spines)	present*	absent
Distal tibial spines	2 close packed rows*	1 short distal row, ragged sub-distal row
Lateral pronotal margins	crenulate, without obvious setae*	smooth, set with short stiff setae
Male abdominal tergite 7	asymmetrical; spur on right side*	symmetrical; no spur
Aedeagus	strongly asymmetrical flagellum very long*	weakly asymmetrical; short flagellum
Antennal segments, length	3 very short; 4 long*	3 and 4 long, subequal
Prosternum, proepimeron	separated by distinct suture	fused, junction faintly demarcated*
Male paratergite 8	large, size equal to 7, exposed; projecting	small, mostly covered by 7; angled medially*
Male abdominal sternite 7	fused with paratergites*	free from paratergites
Loral plates	produced anterad of eyes*	not produced anterad of eyes
Base of rostrum	ahead of eyes*	between and below eyes
Ocular setae	absent	2 kinds present*
Abdominal tergites	distinct	fused*

PROCRYPHOCRICOS J. T. POLHEMUS, NEW GENUS

Figs. 1–5

Type-species. — *Procryphocricos perplexus* J. T. Polhemus, NEW SPECIES.

Description. — Small, ovate, brachypterous. Length 5.1 mm, width 2.7 mm, widest across abdomen (Fig. 1). Entire dorsum rugose, set with short appressed scale-like setae. Head narrow, produced anteriorly $0.5 \times$ eye length, anteclypeal margin almost straight; vertex slightly domed medially, produced behind eyes $0.75 \times$ eye length, with two (1 + 1) trichobothria adjacent to middle of eyes. Eyes $1.5 \times$ as long as wide, with narrow posterior flange; raised, rounded, not forming smooth transition to head, but set off by shallow sulcus on head; ocular setae of two kinds, many short mushroom-shaped setae scattered among the ommatidia, and longer slender setae, two of medium length on inner eye margin, one long setae on lateral margin. Labrum small, arising at anterior margin of anteclypeus, rounded; maxillary plates projecting anteriorly, tips pointed, extending to middle of rostral segment three (second visible). Rostrum short, segment two (first visible) very short, recessed into head, segment three much longer and slightly shorter than four. Antennae of moderate length, segments one and two short, three and four subequal (Fig. 2). Pronotum convex, with broad shallow median depression, margins depressed and demarcated posteriorly and posterolaterally (Fig. 1); lateral margins not crenulate, set with short stiff setae. Scutellum triangular, slightly raised above level of adjacent wing pads, declivant anteriorly. Wing pads triangular, not touching medially, reaching posterior margin of abdominal tergite two; embolium poorly defined, set off mesad by a broad weak longitudinal carina not reaching posterior margin. Abdomen moderately convex dorsally, transversely rugose, connexiva evenly rounded, tergites three to five fused, intersegmental sutures weakly indicated only at lateral margins; connexival margin depressed; posterior margin of tergite five broadly rounded posteriorly, obscuring most of remaining tergites. Ventral surface sparsely set with long dark silky appressed setae absent only on head and prosternum; anterior one-third of prosternum carinate medially, anteromedial portions angled forward over base of carinate gula; prosternum completely exposed, very similar in shape to *Cryphocricos* (see Usinger 1941: fig. 1), fused with proepisternum, demarcated by weak



Figures 1–5. *Procryphocricos perplexus*. 1. Habitus. 2. Antennae. 3. Male abdominal terminalia, dorsal view. 4. Male abdominal terminalia, ventral view. 5. Aedeagus.

indication of suture. Mesosternal plate reflexed anteromedially forming tumescence, remainder medially carinate. Metasternal plate not carinate; metaxyphus triangular, posterior margins carinate. Abdominal venter narrowly glabrous laterally; sense organs similar to and in same position as *Cryphocricos* (see Usinger 1941: Fig. 1). Fore legs with femur broad, tibia narrow, tarsi single-segmented; single claw very short, triangular. Middle and hind femora slender, not modified, set with short stiff appressed setae; tibia set with spines except basally, distally with ventral row of closely set spines, subdistal ragged row of four spines, plus dorsal comb of many closely set stiff setae; tarsal segment one short, two long, three longer. Mid and hind pretarsi with long setiform parempodia; claws long, curved, each with large basal spur. Abdominal segments six to eight almost symmetrical (Figs. 3–4); genital capsule similar to *Cryphocricos*, elongate; aedeagus slightly asymmetrical; parameres small (Fig. 5).

Diagnosis.—*Procryphocricos* differs from *Potamocoris* by its smaller antennae, which are not visible in dorsal view, and by its brachyptery; only macropters of the latter are known. It differs from *Cryphocricos* by its vestiture of silky hairs on abdominal ventrites six through eight, and the characters given in Table 1.

Discussion.—As can be seen from Table 1, *Cryphocricos* possesses a number of apomorphies in comparison to *Procryphocricos*. Because both occur in the brachypterous form, both must possess a plastron, or there would be no way to obtain and hold an air store [see Usinger (1941), Parsons & Hewson (1974) and D. Polhemus (1986) for discussion]; this is an apomorphy for the Cryphocricini within the Cryphocricinae but is not unique within the Naucoridae; see Polhemus & Polhemus (1986) for discussion. In addition, all genera of the Cryphocricinae have a dorsal vestiture of silky hairs on abdominal segments six, seven and eight, but only in *Cryphocricos* these are absent ventrally.

To establish the polarity of characters in Table 1, the outgroup chosen for comparison is the genus *Potamocoris* Hungerford, which in my view is close to the ground plan for the Naucoridae [placed in a separate family by some authors; see Stys & Jansson (1988) for discussion]. *Procryphocricos* shares some primitive characters with *Potamocoris*, for instance similar antennal proportions, but in the latter genus the antenna are much longer and visible in dorsal view. In *Procryphocricos* one pair of facial trichobothria are present medially along the eyes, in the same position as in *Potamocoris*, but the latter has three pairs; also the lateral ocular setae are similar in the two genera, but the latter has no medial pair and lacks the mushroom-shaped ocular setae which constitute an autapomorphy for *Procryphocricos*.

Habitat.—The two known specimens of *Procryphocricos* were found among tangles of fine roots along a small section of steep bank bathed by the moderate current of the Rio Claro. A diligent search of other habitats of many kinds failed to yield additional specimens. Midstream riffles of the Rio Claro and a nearby tributary yielded *Ambrysus*, *Cryphocricos* and *Limnocoris*.

Material Examined.—See species types.

PROCRYPHOCRICOS PERPLEXUS J. T. POLHEMUS, NEW SPECIES

Figs. 1–5

Types.—Holotype, brachypterous male, data: COLOMBIA. *ANTIOQUIA*: Rio Claro, 13 km W of Doradal, 250 m, water temp 25° C, CL 2405, 21 Jul 1989, J. T. and D. A. Polhemus, in J. T. Polhemus Collection (JTPC). Paratype, 1 brachypterous male, same data as holotype (JTPC).

Description, Brachypterous Male.—(See generic description; only additional details given here.) Ground color yellow-brown; pronotum anteromedially and laterally, wing pads, fore legs distally tinged with brown; spines on mid and posterior legs orange-brown; eyes brown. Head deeply set into pronotum; length 0.90 mm, width through eyes 1.10 mm. Eyes with many ommatidia; embraced posteriorly by pronotum; length 0.38 mm, width 0.25 mm, interocular space 0.60 mm. Pronotum broad, maximum length 1.23 mm, length on midline 0.73 mm, width 2.13 mm. Scutellum triangular, roughly 2× as wide as long, length 0.70 mm, width 1.48 mm. Wing pad length 1.03 mm. Abdominal tergites three to seven each set laterally with two (1 + 1) long slender erect tufts of golden setae, on middle of connexival segment three, on posterior one-quarter of four to seven; combined length of fused abdominal tergites three to five, 2.13 mm. Antennal proportions as shown in Fig. 2; distal segment set with a row of stiff evenly spaced setae. Proportions of legs in mm (femur : tibia : tarsus 1:2:3):

anterior, 1.43:1.10:0.30:0:0; middle, 1.18:1.10:0.08:0.18:0.30; posterior, 1.43:1.53:0.10:0.20:0.33. Abdominal terminalia and genitalia as in Figs. 3–5.

Female and Macropterous Forms.—Unknown.

Diagnosis.—*Procryphocricos perplexus* is the only species of the genus.

Material Examined.—See types.

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